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ABSTRACT

This study attempted to understand how price competition would work in higher education and to explore the likely long run equilibrium structure of prices in that context. Inferences are drawn using both microeconomic theory and historical parallels found in the market for graduate education. The analysis suggests that negative prices are likely to prevail at the wealthiest colleges and universities. Using data from the Integrated Postsecondary Education Data System (IPEDS), the study estimated the resulting distribution of prices and school quality. While price competition may increase attendance by low income students at the wealthiest colleges and universities, it is unclear how these students will fare at schools with middling wealth and resources. Schools with less accumulated wealth will be particularly vulnerable to any ensuing price competition. While these conclusions must be interpreted with caution, they do suggest some cause for alarm. (Contains 3 tables and 11 references.) (SLD)

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WHERE IS AGGRESSIVE PRICE COMPETITION TAKING HIGHER EDUCATION?

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ABSTRACT

It is increasingly clear that price competition is escalating in the market for higher education. We attempt to understand how price competition would work in higher education and explore the likely long run equilibrium structure of prices in that context. We draw inferences using both microeconomic theory and historical parallels found in the market for graduate education. Our analysis suggests that negative prices are likely to prevail at the wealthiest colleges and universities. Using data from IPEDS we estimate the resulting distribution of prices and school quality. While price competition may increase attendance by low income students at the wealthiest colleges and universities, it is unclear how they will fare at schools with middling wealth and resources. Further, schools with less accumulated wealth will be particularly vulnerable to any ensuing price competition. While our conclusions must be interpreted with caution, they do suggest some cause for alarm.

Where Is Aggressive Price Competition Taking Higher Education?

Gordon C. Winston and David J. Zimmerman*

A recent headline in the *Chron* read "Tuition Discounting May Rankle, but It Has Become Widespread;"[1] February saw a well attended NACUBO meeting in Dallas on Tuition Discounting where tips were exchanged on how to do it and alarums were sounded on whether to do it; it's been ten years now since the Justice Department made it more difficult for the highly selective colleges and universities to resist price competition through "overlap" meetings on financial aid awards; each February brings announcements of new competitive generosity in financial aid policies by schools like Princeton and Yale and Swarthmore; the latest NACUBO tuition discounting study showed that more than three out of five of the private schools in their survey gave price discounts to 80% or more of their entering class. And so on. Price competition in higher education is clearly heating up and moving up, from the schools that fifteen years ago were offering price discounts to fill beds and classrooms to, now, the wealthiest colleges and universities where it's so far been confined to cutting price by making financial aid offers more attractive. And it's shifted, significantly, from price competition for warm bodies to price competition for student quality.

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[1] Gose, Ben, *The Chronicle of Higher Education*, February 18, 2000, p. A62.

But no one seems to be asking where this is taking us. We're on a train that's accelerating out of the station and we're discussing how to get the best seat in the dining car before the other guy gets it (and, to mix the image, hiring consultants to help us find it). But nobody's talking about where the train is going. That's what this paper is about. "All competition," to paraphrase the politicians, "is local competition," so most of us are looking only at the immediate effects on our own school and our neglect of the big picture is understandable. But that doesn't make it any less dangerous. And beside providing a reasonable argument about where we might be headed, the analysis also says something about widespread vulnerability in where we <u>are</u>.

Let us anticipate the results with a brief summary of answers to "Where Is Price Competition Taking Us?"

- "Negative tuition" will likely appear at the wealthiest colleges and universities – those that spend the most on their students' education – as competition forces them to *pay stipends* to attract the best undergraduates.
- The price umbrella that the wealthy and highest-cost schools now hold over the rest of higher education, over the less-wealthy schools, will collapse, exposing all schools to far more serious price competition than they've seen – or probably imagined – so far.
- A very different price structure will emerge across higher education with higher prices charged by the poorer schools who spend less on their students and lower prices charged above. As quality goes down across schools, price will go up.

- Queuing for admission at the high-expenditure schools, already high, will increase even more as they become, relatively, an even better bargain – when Stanford and Yale pay stipends to their students, virtually everyone will apply to Stanford and Yale.
- Students will continue to attend lower quality, higher priced schools mainly because they can't get into a higher quality, lower priced school.
- Need-based financial aid faces an uncertain future as, more generally, does all college pricing that serves, idealistically, to redistribute income. It won't matter at the top where student stipends are being paid all around, but it may seriously reduce low-income students' access everywhere else.
- There appears to be no obvious way to reverse the spread and energy of price competition if it gains real momentum – the genie won't easily return to the bottle.

If taken seriously, that list is pretty alarming. So should it be taken seriously? It's clearly off the charts of anyone's experience. But of course, energetic price competition for undergraduate quality is also off the charts of anyone's experience, meaning that we have to look to some source other than accumulated common sense and personal experience to see where undergraduate price competition will likely take us.

There are two surprisingly relevant sources on which to base predictions. One is a long history of price competition for graduate student quality among the leading universities – and where price competition has taken that market. The other source of insights is our long experience with and understanding of price competition in for-profit markets – the markets from which we're borrowing it. Combined with national data on institutional saving that have just

become available, that microeconomic theory lets us build empirical estimates of competitive prices on the analytical insights from for-profit markets.

This paper will describe how competition seems to work in the higher education market, then suggest the most evident implications of the resulting structure of prices.

History – the Market for Graduate Student Quality

For 40 years, at least, the wealthiest research universities in the US have followed a schizophrenic pricing policy with respect to student quality.[2] In setting undergraduate tuition and financial aid, they have shunned price competition even to the point, for many of them, of entering into an "overlap" agreement with the stated aim, explicitly, that students would not be influenced by net prices in their choice among schools. Students, then, would "make their college choices unaffected by prices," in the rhetoric of overlap. Student quality was recognized in the need-blind admissions choices by these schools – selection from their long applicant queues – but shunned (by disciplined agreement) in their pricing/aid decisions.[3]

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[2] We can't find any historical documentation of this so we're relying on the experience of one of the authors at Stanford in the early 1960s and colleagues' memories of Harvard and MIT in the same period. Even then the practice appeared to have been around long enough to have become standard procedure in top drawer Economics programs.

[3] Two points. One is, simply, that some slight competitive price fudging in financial aid took the form of "preferential packaging," even among those schools that described themselves as dedicatedly need-based in their aid. It amounted to "merit-within-need," recognizing student quality (or qualities) with, typically, more grant and less loan aid. The other point is that while no individual school among these highly selective institutions could simultaneously accommodate the contradictions of meritocratic and egalitarian selection, as a group, together, they could and did. How far up the ranks of institutional quality a student got admitted recognized her merit while the collective adherence by these schools to need-based aid recognized egalitarian access. Acceptance of this by the schools, of course, required a positional modesty – a willingness often to lose the best students to higher ranked schools – that is increasingly rejected as not sufficiently aggressive. It is being replaced by the use of price competition to improve relative position by improving average student quality at the expense of the other schools. See Winston, "The Positional Arms Race in Higher Education," WPEHE DP-54, April, 2000. And on expensive

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But these highly selective universities, at the same time, bid fiercely against each other for student quality in their PhD programs with the result was that the best students in those programs have been paid often-handsome stipends by the university to attend – the students themselves paid "negative tuition." And lest those stipends be dismissed as wages for teaching and research assistance, the best students were often rewarded by having no obligations except to excel in their work – the schools were paying for pure peer effects or the expectation of future distinction that would redound to the school.[4] Updating the practices, a quick scan of websites of leading Economics PhD programs[5] reveals stipends of $15,000 a year at Berkeley, $10,500 at Yale, $13,500 at Harvard, $15,600 for 12 months at Northwestern, $12,000 at Penn, etc. And all these stipends are on top of remission of a tuition that ranges from $23,000 to $29,000 a year.

So aggressive price competition for graduate student quality has been in place a long time and it has resulted in tuitions' being bid down so far that they're now negative – the best students are paid to attend. Those stipends are intended directly to effect students' choice of program, and they do.[6] The implications appear to be two: we do have at least one case from higher education where price competition for student quality has played itself out to what looks like "a long run competitive equilibrium" and the result there is negative prices at the top. And it's the same wealthy universities that have most strongly resisted undergraduate price competition who

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recruiting of student quality, see Steinberg, Jacques, "Role Reversal Time for College Supplicants", *The New York Times*, May 3, 2000, p. 1.

[4] It was in a Stanford graduate microtheory class that one of the authors first heard the central role of peer effects articulated, if not labeled as such. When it was suggested by a nervy student that Mel Reder might spend more time preparing his lectures, he explained to the class that it misunderstood the educational process in a leading graduate school. The faculty's role, he explained patiently, was to put together an excellent syllabus and a class of superior students, then leave them alone to educate each other.

[5] As of March, 2000. Some, including Stanford, Chicago, and Columbia, didn't report the stipend value.

have bid their graduate tuitions into negative territory, so it's hard, realistically, to hope that the pricing lessons of graduate programs won't be applied to their increasingly price-competitive markets for undergraduate quality.

Price Competition in For-profit Markets

While one of us has cautioned energetically elsewhere[7] against the use of conventional microeconomic theories to understand higher education without looking carefully at the unique economic characteristics and circumstances of colleges and universities, for present purposes we can safely borrow the broad understanding of how price competition works among firms. It needs some adaptation to colleges and universities, but the theory of price competition, in brief, is this:

Competitive firms give up excess revenues in order to lower price in order to sell more product: an aggressive firm may lead the process with price reductions but the passive firm will have to follow or lose customers and risk going out of business. Competition reduces freedom, including the freedom to opt out of competition. Excess revenues in the for-profit firm – those revenues not necessary to the production and delivery of the product – are "economic profits,"[8] the excess of price over cost. The end point of the competitive process – the long-run competitive equilibrium – sees all excess revenues converted into lower prices leaving zero

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[6] "I got into MIT but they didn't give me any money, so I'll probably go to Berkeley where I got $10,000 for three years" – conversation recently overheard between two Williams seniors.

[7] Winston, Gordon C. "College Costs: Subsidies, Intuition, and Policy," Prepared for the National Commission on the Cost of Higher Education. *Straight Talk About College Costs and Prices*. Phoenix: The Oryx Press; 1998.

[8] Defined, unlike "accounting profits," to include a sufficient return on investment to keep the owners engaged in that industry.

economic profit. The pressure to do this, of course, comes from the price reductions of competing firms. The competitive market is socially efficient because, in the end, prices come down to equal costs (and costs are pushed as low as possible, consistent with quality). So the customer – society – gets the most for its money. Firms are ultimately powerless. Markets are efficient. Excess revenues are transferred to the customers in the form of reduced prices.

Higher Education: The College

How does that stylized description apply to colleges and universities? In broad brush, the effects of price competition are much the same. Schools lower prices aggressively (maybe the sticker price, but more likely by discounting individual prices with "financial aid") to get more or better students. Or they lower price defensively to fend off the effects of competitors' lower prices that threaten their existing student numbers or quality. Either way, the school, like a firm, converts its excess revenues into price reductions. And like the firm, price reductions without loss of quality can continue only so long as excess revenues continue to exist. If there's inefficiency in production, so that costs are unnecessarily high to start with, those inefficiencies are like excess revenues and getting rid of them allows further lowering of price. Finally, like the firm in a long run competitive equilibrium, the school's price and cost will settle where there are no excess revenues – where its price and costs are as low as they can possibly be.

But, the differences between a college and a firm are both deep and important.

In a firm, the excess revenues that are sacrificed to price competition are economic profits – the excess of price over costs. In the college, the excess revenues that are sacrificed to price competition are *saving* – the excess of total revenues over cost. The difference is important because colleges are, simultaneously, both charities and commercial enterprises – churches and car dealers. So their revenues come from charitable donations,[9] on the one hand, and from sales revenues, on the other. Both. As a consequence of their dual nature, colleges sell their product to customers but at a price that's typically much less than its production costs. So each student-customer gets a subsidy, cost minus price. On average in the US in 1995, a $12,800 education was sold for a price of $4,000, giving each student a subsidy of a cool $8,800. Some of a college's charitable revenues go to pay for that student subsidy while the rest is left over as saving.[10]

For a college, saving is the excess revenue that will be competed away by price competition. In the long run competitive equilibrium, saving will be zero[11] and costs will be covered by price plus subsidy.

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[9] Broadly defined as 'non-tuition revenues' – to include appropriations, gifts and grants, and earnings from previously donated wealth.

[10] In the familiar for-profit firm, price equals unit cost plus profit, $p = c + \pi$. Those are the sources and uses of its funds. Profit takes the form of dividends, d, and "retained earnings" or saving, v, so $\pi = d + v$. In the for-profit firm, then, $p = c + d + v$. In the college, charitable revenues, δ, augment sales revenues, p_n, (net of financial aid discounting) and a legally binding 'non-distribution constraint' requires that $d = 0$. So sources and uses of funds in the college or university reduce to $p_n + \delta = c + v$. Charitable revenues are used to support student subsidies, $s = c - p_n$, and saving, v, so $\delta = s + v$. In a long run competitive equilibrium in the for-profit firm, $p = c$ and in the college, $p_n + s = c$. π and v, in their respective contexts, will have been competed down to zero.

[11] Caveats are needed here as with the zero-profit equilibrium of the for-profit firm. Saving will have to be positive if there's inflation; saving will have to be positive to provide more non-tuition revenues in the future if educational quality is to be maintained in a world of increasing external labor productivity or increases in measurement costs. If these were widely recognized, price competition would leave some positive saving.

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Higher Education: The Market

The last step goes to the whole market of colleges and universities selling undergraduate education.

The central economic fact of the higher education market is the differences in schools' charitable revenues, their non-tuition income, that create a pronounced hierarchy based on schools' wealth and the student subsidies it supports. The resulting structure, reflected in Table 1, is, in brief:[12]

> *The wealthiest schools pay the largest student subsidies. With rare exceptions[13] larger subsidies go with more expenditures per student and only a bit higher prices. So the subsidy hierarchy is also a hierarchy of wealth, expenditures, and – to a lesser extent – net prices. Higher subsidy and higher quality generate greater student demand; enrollment restrictions turn that into excess demand; excess demand allows selection of students for their peer quality.[14] It would be only a slight exaggeration to picture the resulting matching process as one in which all students line up for admission to the wealthiest school (with its large expenditures and low price) and if they don't get in there, to the next wealthiest, and if not there, to the next,... and so on down the hierarchy. It's a process of queue-and-cascade. There's a limited supply of student quality and the high-subsidy schools get the first crack at it. Schools restrict enrollments in order to protect both the size of their subsidies (any fixed wealth is diluted if spread over more*

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[12] This is spelled out with more data, patience, and implications in Winston, Gordon C., "The Positional Arms Race in Higher Education," Discussion Paper No. 54, The Williams Project on the Economics of Higher Education, April, 2000, and Winston, Gordon C., "Subsidies, Hierarchy and Peers: The Awkward Economics of Higher Education," *Journal of Economic Perspectives*, vol 13, No. 1, (Winter 1999), pp 13-36.

[13] Berea, Cooper Union, and (soon) Olin University use their subsidy resources to provide an education free of tuition payments so their prices equal zero and expenditures per student are whatever their charitable resources will support.

[14] Their ability to contribute to others' education: Goethals, George R., Gordon C. Winston, and David J. Zimmerman, "Students Educating Students: The Emerging Role of Peer Effects in Higher Education," Discussion Paper No. 50, The Williams Project on the Economics of Higher Education, March, 1999 and Rothschild, Michael

Table 1

Sources and Uses of Educational Revenues in US Higher Education

Sales, Donations, Costs, and Saving

by Subsidy decile

	Number of Schools	Educational Revenues					Student Subsidies	Price-Cost Ratio	Competitive Net Tuition
		Total	Sources		Uses				
			Commercial: Net Tuition	Charitable: Donations	Production Costs	Saving			
	N	T	P_n	DR	C	V	$C-P_n$	P_n/C	P_n-V
All Institutions	1581	13,748	3,548	10,200	12,250	1,497	8,702	28.96%	2,051
All Public	888	9,943	1,107	8,836	9,366	577	8,259	11.82%	530
All Private	693	18,622	6,675	11,947	15,946	2,676	9,271	41.86%	3,999
Public Institutions									
Decile 1	89	16,662	1,469	15,193	15,466	1,196	13,997	9.50%	273
Decile 2	89	12,595	1,052	11,543	11,897	698	10,845	8.84%	354
Decile 3	89	11,421	1,214	10,207	10,793	628	9,579	11.24%	586
Decile 4	89	10,510	1,060	9,450	9,799	711	8,739	10.82%	349
Decile 5	88	9,762	1,108	8,654	9,246	516	8,138	11.99%	592
Decile 6	89	8,889	927	7,962	8,372	517	7,445	11.07%	410
Decile 7	89	8,416	1,126	7,291	8,045	371	6,919	13.99%	755
Decile 8	89	7,813	1,150	6,663	7,475	338	6,324	15.39%	812
Decile 9	89	7,273	1,001	6,272	6,782	492	5,781	14.76%	509
Decile 10	88	6,047	964	5,083	5,746	301	4,782	16.78%	663
Private Institutions									
Decile 1	70	39,993	8,442	31,551	30,736	9,257	22,294	27.47%	-816
Decile 2	69	24,350	6,562	17,788	19,921	4,428	13,359	32.94%	2,134
Decile 3	69	19,345	6,374	12,970	17,635	1,710	11,260	36.15%	4,664
Decile 4	70	17,613	6,066	11,547	15,751	1,863	9,684	38.51%	4,204
Decile 5	69	17,730	6,794	10,936	15,393	2,337	8,599	44.14%	4,457
Decile 6	69	15,751	6,365	9,386	13,894	1,857	7,529	45.81%	4,508
Decile 7	70	14,857	6,718	8,139	13,266	1,591	6,548	50.64%	5,127
Decile 8	69	13,826	6,695	7,131	12,353	1,473	5,658	54.20%	5,222
Decile 9	69	12,058	6,245	5,812	10,893	1,165	4,648	57.33%	5,081
Decile 10	69	10,460	6,473	3,987	9,445	1,015	2,973	68.53%	5,458

Notes:

1. "Educational" reflects allocation of educational, non-educational, and joint costs as described in Winston-Yen, DP-32.

2. The data are drawn from the IPEDS 1986-7, 1990-1, and 1995-6 surveys and averaged. They are reported in 1996 dollars per FTE student [Winston, Carbone, and Hurshman].

3. "Charitable" includes appropriations, gifts, and asset earnings.

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and Lawrence J. White, "The Analytics of Pricing in Higher Education and Other Services in Which Customers are Inputs," *Journal of Political Economy*, June, 1995, v. 103, pp. 573-86.

students) and their access to student quality. It's a positional market in which a school's access to student quality depends on the size of its own student subsidy relative to those being paid by schools close by in the hierarchy. Finally, schools that have the most charitable revenues also have the greatest saving – the most excess revenues.

That description is highly stylized but accurate.

Higher Education and Price Competition

But the microeconomic understanding of competition, even modified by the unique economic structure of higher education, wouldn't be of much practical use without some way to estimate the "excess revenues" in colleges and universities that price competition would convert into lower prices. So it's fortunate that numbers have been generated in the past few months from reported IPEDS financial data that provide saving estimates for upwards of 2,100 colleges and universities for 1986-7, 1990-1, and 1995-6. From them a panel of some 1,600 schools – roughly 900 public and 700 private – was formed providing figures for average saving over that period.[15] One could wish, clearly, that a longer period were covered to better damp the effects of national prosperity in two of those three years, but the best we can do is to suggest some caution in interpreting the results – good times increase institutional saving and reduce our estimates of long run competitive equilibrium prices.[16]

[15]It might seem a straightforward matter to generate savings as the difference between income and expenditures in IPEDS data, but unfortunately, IPEDS reports only that part of asset income that supports current spending – is "availed" – and not the total asset income needed to estimate saving. So the saving estimates were based, instead, on their (tautological) effect in changing a school's net wealth. See Winston, Gordon C., Jared Carbone, and Laurie Hurshman, "How Much Do Colleges Save?" (forthcoming) for details.

The procedure for estimating the prices that aggressive price competition would produce was simply to figure that for each institution, all of its excess revenues – its saving – would be bid away, leaving it with prices that, along with subsidies, just covered costs. This, clearly, is borrowed directly from the effects of price competition in a for-profit market. The estimated competitive price, then, is the net price that actually prevailed at each school, averaged over those three years, *less* its average saving. As prices were reduced by the amount of average saving, student subsidies – as the difference between cost and price – would rise by that amount. Competition will shift resources from institutional saving to student subsidies by lowering price.

Table 2, then, shows prices, expenditures per student, subsidies, and saving as they appear from the actual data for those three years ("Before") and as they would emerge from a competitive price equilibrium ("After"). Figures are reported separately for the public and private schools and each sector's schools are further disaggregated by subsidy decile. Figures 1 and 2 give a more complete picture of those cost and price patterns for the private sector with schools arranged on the horizontal axis in descending order of subsidy size. In Figure 1, the pattern of actual costs and prices is shown; in Figure 2, the pattern estimated to emerge from price competition. (Because most of the action on price competition takes place in the private sector, those patterns are emphasized.[17]) In both the Table and the Figures, spending per student is shown not to change with price competition so the question they address is "What prices would emerge from competition if there were no reduction in educational quality?"

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[16] In an effort to see how unrepresentative these three years were, we compared their per capita GNP against a 30 year trend and found that, together, they were slightly below the line. So exaggeration of saving is probably mild at worst.

[17] Price competition has so far been most evident in the private sector. More basically, though, it's consistent with the data of Table 2 that private sector schools have both more discretion over their pricing and more direct responsibility for their future so their attention to saving is greater. Too, the concentration of stocks of accumulated

Table 2

The Effects of Price Competition

A Comparison of Actual and Competitive Prices, Costs, Subsidies, and Saving

Ranked by Subsidy Decile

	Before Price Competition				After Price Competition			
	Net Price	Cost	Subsidy	Saving	Net Price	Cost	Subsidy	Saving
	P_n	C	$C-P_n$	V	P_n	C	$C-P_n$	V
All Institutions	$3,548	$12,250	$8,702	$1,497	$2,051	$12,250	$10,200	$0
All Public	$1,107	$9,366	$8,259	$577	$530	$9,366	$8,836	$0
All Private	$6,675	$15,946	$9,271	$2,676	$3,999	$15,946	$11,947	$0
Public Institutions								
Decile 1	$1,469	$15,466	$13,997	$1,196	$273	$15,466	$15,193	$0
Decile 2	$1,052	$11,897	$10,845	$698	$354	$11,897	$11,543	$0
Decile 3	$1,214	$10,793	$9,579	$628	$586	$10,793	$10,207	$0
Decile 4	$1,060	$9,799	$8,739	$711	$349	$9,799	$9,450	$0
Decile 5	$1,108	$9,246	$8,138	$516	$592	$9,246	$8,654	$0
Decile 6	$927	$8,372	$7,445	$517	$410	$8,372	$7,962	$0
Decile 7	$1,126	$8,045	$6,919	$371	$755	$8,045	$7,291	$0
Decile 8	$1,150	$7,475	$6,324	$338	$812	$7,475	$6,663	$0
Decile 9	$1,001	$6,782	$5,781	$492	$509	$6,782	$6,272	$0
Decile 10	$964	$5,746	$4,782	$301	$663	$5,746	$5,083	$0
Private Institutions								
Decile 1	$8,442	$30,736	$22,294	$9,257	-$816	$30,736	$31,551	$0
Decile 2	$6,562	$19,921	$13,359	$4,428	$2,134	$19,921	$17,788	$0
Decile 3	$6,374	$17,635	$11,260	$1,710	$4,664	$17,635	$12,970	$0
Decile 4	$6,066	$15,751	$9,684	$1,863	$4,204	$15,751	$11,547	$0
Decile 5	$6,794	$15,393	$8,599	$2,337	$4,457	$15,393	$10,936	$0
Decile 6	$6,365	$13,894	$7,529	$1,857	$4,508	$13,894	$9,386	$0
Decile 7	$6,718	$13,266	$6,548	$1,591	$5,127	$13,266	$8,139	$0
Decile 8	$6,695	$12,353	$5,658	$1,473	$5,222	$12,353	$7,131	$0
Decile 9	$6,245	$10,893	$4,648	$1,165	$5,081	$10,893	$5,812	$0
Decile 10	$6,473	$9,445	$2,973	$1,015	$5,458	$9,445	$3,987	$0

wealth in the private sector is associated with greater saving, hence more of the excess revenues that are vulnerable to price competition.

Figure 1
Current Structure of Costs and Prices in US Higher Education
20 School Moving Average
Average of 1987, 1991, and 1996 IPEDS data
Private Schools

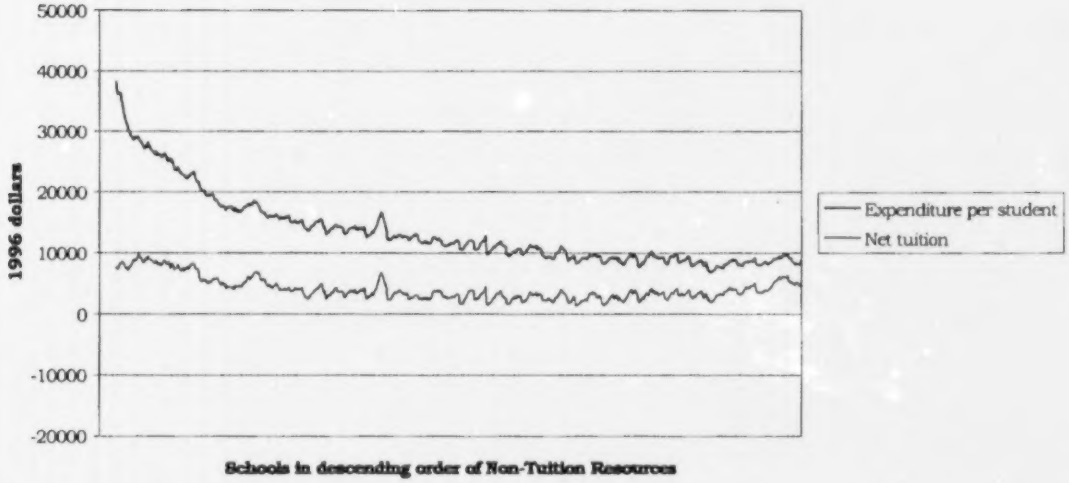
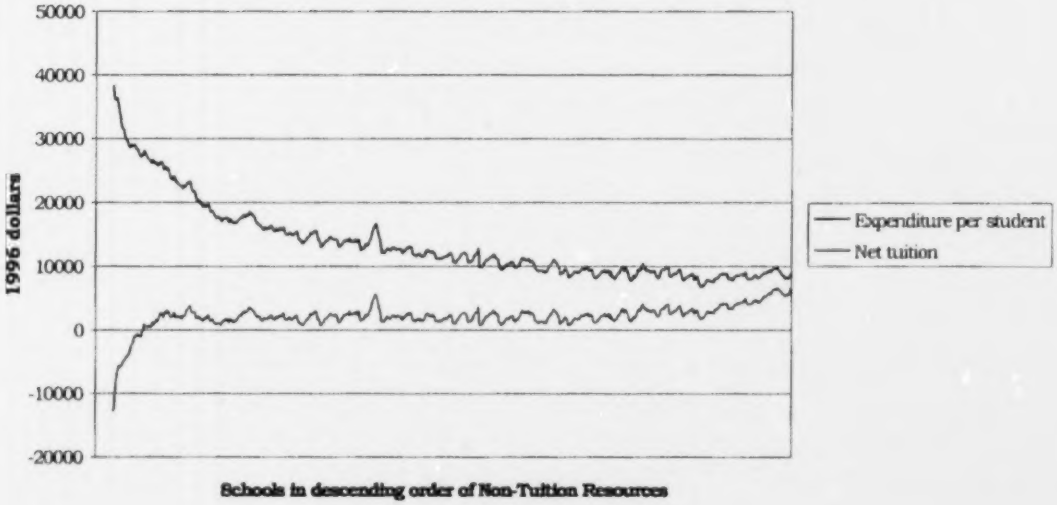


Figure 2
Competitive Structure of Costs and Prices in US Higher Education
20 School Moving Average
Average of 1987, 1991, and 1996 IPEDS data
Private Schools



Student Subsidies: Negative Tuition

The negative tuition payments –stipends – that appear with the largest of private sector wealth and subsidies may be the most dramatic result of Table 2 and Figure 2. A school whose current saving is greater than its price will, under pressure of price competition, be forced to continue to lower its price until it's negative and all saving has been converted to student subsidy. In the Table, the average stipend paid by the top 70 private schools is $816 a year but decile aggregation hides a good deal. The wealthiest schools' stipends will exert disproportionate influence on the price structure. This concentration of stipends is evident in Figure 2 where a 20-school moving average shows that the 20 highest subsidy schools would pay an average stipend of more than $12,000 a year. (These, of course, look a lot like the student stipends now paid to the best Ph.D. candidates by the best economics departments.) It's clear that the wealthiest schools are capable, in a highly competitive environment, of paying significant stipends for undergraduate student quality.

The Structure of Prices and Costs

But it is the overall structure of costs and competitive prices in Figure 2 -- that seems to have the greatest significance. As we move from wealthy to less-wealthy schools – from left to right in that Figure – prices rise at the same time that expenditures per student fall. The pattern of actual prices and costs that now sees price/cost ratios rise with falling subsidies will be massively exaggerated by price competition. Not only will those high cost schools at the top pay students to attend, but as we move to schools with less spending per student, the price students pay will

rise. Table 3 illustrates this. In the top 20 private schools, students on average will be paid $12,740 to buy a $38,336 education. At the 90th percentile, a student will pay the school $1,718 for a $17,615 education. The median school will be paid $2,296 by its students for an education that costs $11,046 to produce and in the bottom twenty schools, students will pay $6,580 for an $8,794 education.[18]

Table 3

Costs and Competitive Prices

	Expenditure per Student	*Competitive Price*
Top 20	$38,336	-$12,740
90th percentile	$17,615	$1,718
Median	$11,046	$2,296
Bottom 20	$8,794	$6,580

Note: These numbers are based on a ranking by *non-tuition revenues*. The data are drawn from the IPEDS 1986-7, 1990-1, and 1995-6 surveys and averaged. They are reported in 1996 dollars per FTE student. A description of the methodology used to calculate these variables will be found in the forthcoming paper by Winston, Carbone, and Hurshman.

Overall, prices are significantly lower under competition than at present, but the radically altered structure of costs, prices, and subsidies across higher education will introduce considerable complication in itself.

We described the present system of allocating students and student quality across schools as "queue-and-cascade." In the simple version of matching students and colleges presented there, all students lined up for admission to the school with the highest subsidy which took its pick of the highest quality students and, having filled its class, left the rest for the school with the next

[18] These are from the saving panel that was used, in 20-school moving averages, to generate Figures 1 and 2. For details, see Winston, Carbone, and Hurshman.

largest subsidy which took the best from that reduced pool, and so on down the hierarchy of subsidy and costs. The result was the assignment of the best students to the highest subsidy schools where students paid the least to get the most educational spending (and the best peers).

That is a caricature, of course, and while it captures a good deal of likely reality, especially in the national market for student quality,[19] it is far too precise a mechanism that implies too much concentration of the best students in the best schools to be entirely realistic.

It seems clear, though, that the much more exaggerated price and school quality structure that would come with competitive pricing would move student quality allocations even closer to that extreme concentration of quality. With Harvard and Swarthmore and Williams not simply inexpensive relative to what they spend on their students' education, as they are now, but actually free or paying stipends – and inexpensive relative to all alternative schools -- the queues of high-quality applicants would surely increase and therefore their concentration in those schools. Concentration would be compounded, too, by the spread of knowledge about their price advantage.

Expand Enrollments?

Two related questions on this student assignment mechanism are immediate – many more remain to be identified. Wouldn't the wealthy schools expand enrollments to take advantage of their radically improved applicant pools? And how would schools farther down in the pecking

[19] Hoxby, Caroline M. "How the Changing Market Structure of U.S. Higher Education Explains College Tuition." NBER Working Paper 6323, December, 1997, and Frank and Cook

order fill their classes, given their higher prices and lower educational spending? Why would anyone go there instead of going to Harvard or Amherst where they'd be paid to attend?

The answer to the first question – why wouldn't the wealthy schools expand? – would appear to be pretty much the same as it is now. Private schools have fairly inflexible charitable wealth from which to subsidize their students so if they expand the number of students, they decrease the subsidy each of them gets. And it is per-student subsidy that appears to establish the hierarchy of student demand. So enrollment expansion risks a school's relative position in its access to student quality. And if a school is reluctant to fall in access to student quality – in position – it's compounded by a reluctance to dip deeper into the quality of any given applicant pool. So there are two good reasons for a school to resist expansion and neither of them would appear to be affected by the new structure induced by price competition.

The answer to the second question – why would students go to higher priced, lower quality schools when they'd have been paid to go to Harvard? – follows pretty obviously. "Because they didn't get in to Harvard." Less wealthy schools with their reduced spending and increased prices will get students if only because those students can't get into the lower priced, higher quality schools. And, perhaps even more important, the pure queue-and-cascade picture is a too mechanical and "rational" one and in fact some people do and will continue to choose colleges on much richer and humane criteria than the size of the school's subsidy or its price/cost ratio. But it remains that the sort of radical shift in subsidies and prices we've described would tend further to concentrate student quality at the top.

The Price Umbrella

A substantial price umbrella is evident in Figures 1 and 2 and Table 2. This umbrella may be in jeopardy. The wealthy schools currently charge prices that protect the less wealthy from real, heavy-duty price competition. On average, in the top private decile, a $31,000 education is now sold for a price of $8,400 while in the next decile down, a $20,000 education is sold for $6,600. Spending per student is lower between those deciles by $11,000 or 35% while the price the student pays is lower by only $1,800 or 20%. Comparing top and fifth deciles, spending is 50% lower but price is still only 20% less. With competitive prices, those differences would be reversed: the school giving the $20,000 education would be charging $2,900 *more* than the school spending $31,000 on its students; the school with the $15,000 education would charge $5,300 more.

It's hard to get one's mind around the full effects of this kind of pricing structure. One thing seems sure: that the widespread preoccupation with the fortunes of the wealthiest schools has not been entirely a case of glamour-struck fascination with the rich and famous but, instead, at some level, an appreciation of their role as the 800 pound gorillas whose behavior has inordinate importance for all of higher education. They hold up the umbrella. The less wealthy schools have been able to charge much higher tuitions only because those at the top charged even more. It is not idle to suggest that the movement of price competition to the top will change, qualitatively, the nature of higher education.

Cost Competition

The pictures drawn to this point portray the competitive price structure that would emerge if schools simply responded to price competition by using excess revenues to meet lower competitive prices without altering their spending per student. But of course, those lower prices would put pressure on costs, too, especially with the price inversion created by differential wealth. So the less-wealthy school could, to some extent, offset its higher prices by lowering its costs. After some, probably minimal, elimination of inefficiency, though, cost reductions would mean reductions in quality and while subsidies could remain unchanged, it's not clear what that would do to student demand. It is clear, though, that so long as the wealthiest schools can make their competitive prices negative – so long as they can pay the stipend for student quality – the less wealthy schools can't match their prices with cost reductions. All they can hope to do is make the price differentials smaller. It's a market structure with which we've had no experience.

Conclusion

This paper has obviously raised far more questions than it could answer but we hope it has answered The Big One that will make it possible, and necessary, to address the others. That's the question of how we can begin to think about – and estimate the magnitudes of – the effects that genuine price competition will have on colleges, universities, and higher education. If that's been done – or even effectively started – this paper will, despite all it's left out, have served its purpose.

The most important missing question – one that we can't yet handle – is whether price competition is or isn't A Good Thing for society. We are convinced that it's A Traumatic Thing for higher education that, if it proceeds unchecked, will leave few schools untouched and will rewrite the rules of the game.

It appears, clearly, to be A Good Thing for the highly able poor kid who will know – as will everyone – that Harvard and Stanford and Wellesley are not just free but paying for people like her to come. But is it A Good Thing for society to be spending those ample Harvard stipends on the well-prepared children of wealth and privilege who can fully afford to pay for it and, under today's rules, do? Or is there a chance that the wealthy schools like Yale or Swarthmore would follow Berea's policy of denying admission (and hence their large subsidies) to kids whose parents earned too much income ($44,000 - $60,000 a year at Berea)? But price competition would appear likely to mean more concentration of talented kids at high-resource schools where other talented kids amplified their peer effects and, to this point, there's no hint of agreement on the social desirability of that. And finally and most generally, we simply can't see whether there's room for continued redistributive price discrimination among students by those schools that must charge a positive tuition at the same time that Harvard pays its students to attend – a price discrimination by which those schools could continue need-based aid or other redistributive pricing when well-honed price competition is the rule of the day. A real worry is that the process of price competition, concentrating as it has on individual price discounting in the guise of financial aid, will have so conditioned – trained – students and their parents that willingly paying a tuition that might support a poorer student will increasingly be considered naïve and even irrational. We hope that's too pessimistic.

In sum,

- we can't ignore the growth and energy of price competition or the difficulty of containing it so
- it has become essential to examine where it's going – the myopic focus on one's own school's fortunes may be what an "Enrollment Manager" is paid to do, but the rest of us had better be dealing with that broader question
- these elements of its answer – the results of price competition in graduate student quality and the lessons from the mechanism of price competition in for-profit markets, once it's tailored to the economic circumstances of higher education – would appear to be essential.
- The conclusions of this analysis may be unduly radical or gloomy, but they appear to need thoughtful consideration, and soon.

Let us end with an observation. Much has been made of the fact that colleges and universities are simultaneously commercial firms and charitable organizations and now that we're able to do a complete accounting of the sources and uses of a college's funds – now that we've got saving data – it becomes clear that far more of our revenues come from our churchly part than from our car-dealer part. Over all of higher education, some 75% of the revenues are from "charitable donations," broadly construed, and only 25% are sales revenues: for the private sector, alone, it's 65% charity and 35% commerce.

So it sounds like a morality play of sorts if our increasing embrace of our commercial nature and its hard-nosed and sophisticated price competition – its take-no-prisoners tuition discounting and merit aid – leads us, collectively, to a world in which the balance between church and car

dealer is tilted even more toward the collection plate – where commercial sales revenues will be even less important and our charity base more important. So we appear to be headed toward a world in which sales will account for only 15% of revenues in higher education – the remaining 85% coming from donations of one sort or another – and only 25% of revenues in the private sector. As they become more like pure charities, the rich schools and the poor ones will be even more differentiated with even less ability to rely on commercial sales income to damp those differences. Apparently, if our commercial part lives by price competition, it will die by price competition, too.

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